

PTO 1390 Page 1 of 1

US Dept. of Commerce Pat. &amp; Trademark Office

Attorney's Docket No.

21527

TRANSMITTAL LETTER TO THE UNITED STATES  
DESIGNATED/ELECTED OFFICE (DO/EO/US)  
CONCERNING A FILING UNDER 35 USC 371

US. Application No. (if known)

09/601014

INTERNATIONAL APP. NO.

PCT/EP98/08375 ✓

INTERNATIONAL FILING DATE

21 December 1998 ✓

PRIORITY DATE CLAIMED

31 January 1998 ✓

TITLE OF INVENTION

**MACHINE OR ACCESSORY UNIT FOR PRODUCING FOLDED CONTAINERS, ESPECIALLY  
FOLDING BOXES FROM BLANKS**

APPLICANT(S) FOR DO/EO/US

Lothar KUMPEL ✓

Applicant herewith submits to the United States Designated/Elected Office (DO/EU/US) the following .

1. ☒ This is a **FIRST** submission of items concerning a filing under 35 USC 371.
2. ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 USC 371.
3. ☐ This is an express request to begin national examination procedures (35 USC 371(f)) at any time rather than delay examination until the expiration of the applicable time limit set in 35 USC 317(b) and PCT Articles 22 and 39(1).
4. ☒ A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date.
5. ☒ A copy of the International Application as filed (35 USC 371(c)(2)).
  - a. ☒ is transmitted herewith (required only if not transmitted by the International Bureau.
  - b. ☐ has been transmitted by the International Bureau.
  - c. ☐ is not required, as the application was filed in the United States Patent Office.
6. ☒ A translation of the International application into English.
7. ☐ Amendments to the claims of the International Application under PCT Article 19 (35 USC 371(c)(3)).
  - a. ☐ are transmitted herewith (required only if not transmitted by the International Bureau.
  - b. ☐ have been transmitted by the International Bureau.
  - c. ☐ have not been made; however the time limit for making such amendments has NOT expired.
  - d. ☐ have not been made and will not be made.
8. ☐ A translation of the amendments to the claims under PCT Article 19 (35 USC 371(c)(3)).
9. ☒ An oath or declaration of the inventor(s) (35 USC 371(c)(4)).
10. ☐ A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 USC 371(c)(5)).

**Items 11. to 16. below concern documents or information included:**

11. ☐ An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
12. ☒ An Assignment for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
13. ☒ A **FIRST** preliminary amendment.  
☐ A **SECOND** or **SUBSEQUENT** preliminary amendment.
14. ☐ A substitute specification.
15. ☐ A change of power of attorney and/or address letter.
16. ☒ Other items of information.  
Drawing (1 sheets)  
References  
PTO-1449

US Application no (if known)

International Application no.

534 Rec'd PCT/PTO

21527

24 JUL 2000

09/601014

PCT/EP98/08375

## 17. The following fees are submitted:

## Basic National Fee (37 CFR 1.492(a)(1)-(5):

Search report has been prepared by the EPO or JP ..... \$840.00

Int'l prel. exam. fee paid to USPTO (37 CFR 1.482) ..... \$670.00

No int'l prel. exam. fee paid to USPTO (37 CFR 1.482)

but int'l search fee paid to USPTO (37 CFR 1.445(a)(2)) ..... \$690.00

Neither int'l prel. exam fee (37 CFR 1.482) nor

int'l search fee (37 CFR 1.455(a)(2)) paid to USPTO ..... \$970.00

Intl. prel. exam. fee paid to USPTO (37 CFR 1.482)

and all claims satisfied provisions of PCT Art. 33(2-4) ..... \$96.00

ENTER APPROPRIATE BASIC FEE AMOUNT

CALCULATIONS PTO USE ONLY

\$970

Surcharge of \$130.00 for furnishing oath or declaration later than ☐ 20 ☐ 30 months from the earliest claimed priority date (37 CFR 1.492(e)).

CLAIMS

NO. FILED

NO. EXTRA

RATE

Total claims

6

0

\$18

\$0

Ind. claims

0

0

\$78

\$0

MULTIPLE DEP. CLAIM(S) (if applicable) (see prel. amt.)

260

TOTAL OF ABOVE CALCULATIONS

\$970

Reduction of 1/2 for filing by small entity, if applicable. Verified Small Entity Statement must also be filed (37 CFR 1.2, 1.27, 1.28)

\$0

SUBTOTAL

\$970

Processing fee of \$130.00 for furnishing the English translation later than ☐ 20 ☐ 30 months from the earliest claimed priority date (37 CFR 1.492(f)).

TOTAL NATIONAL FEE

\$970

Fee for recording the enclosed assignment (37 CFR 1.21(h)). The Assignment may be accompanied by an appropriate PTO-1595 cover sheet (37 CFR 3.28, 3.39)

\$40

TOTAL FEES ENCLOSED

\$1,010

Amt to be refunded

Amt to be charged

- a. ☒ A check in the amount of \$970 to cover the above fees is enclosed  
☒ A check in the amount of \$40 to cover recordal of the Assignment  
b. ☐ Please charge my deposit account 18-2025 \$00.00 to cover the above fees. A copy of this sheet is enclosed.  
c. ☒ The commissioner is authorized to charge any additional fees which may be required or credit any overpayment to deposit account 18-2025. A copy of this sheet is enclosed

NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.

Send all correspondence to:

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21527

09/601014

534 Rec'd PCT/PTO 24 JUL 2000

IN THE U.S. PATENT AND TRADEMARK OFFICE

Inventor                      Lothar KÜMPEL  
Patent App.                  Not known (US Nat'l phase of PCT/EP98/08375)  
Filed                         Concurrently herewith  
For                          MACHINE OR ACCESSORY UNIT FOR PRODUCING FOLDED  
                              CONTAINERS, ESPECIALLY FOLDING BOXES FROM  
                              BLANKS  
Art Unit                      Not known  
Hon. Commissioner of Patents  
Washington, DC 20231

PRELIMINARY AMENDMENT

Prior to examination of the above-identified application,  
please amend as follows:

In the translation serving as Specification:

Page 1, replace line 3 with

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CROSS REFERENCE TO RELATED APPLICATIONS

This application is the US national phase  
of PCT application PCT/EP98/08375 filed 21  
December 1998 with a claim to the priority of  
German application 19803820.8 filed 31 January  
1998.

FIELD OF THE INVENTION

--.

In the claims:

1           1. (amended) [Machine or accessory] An apparatus for  
2 making folded containers, in particular folded boxes, from blanks  
3 having  
4 machine elements [(2, 6, 10, 13)] for acting on [and/or  
5 moving] the blanks or containers which are  
6 manually positionable for different blank  
7 sizes;  
8 position sensors [(17)] for determining the actual posi-  
9 tions of the machine elements [(2, 6, 10, 13)]  
10 to be positioned; and  
11 a memory unit [(18)] for storing the desired positions  
12 for various blank sizes,  
13 [characterized in that] wherein  
14 both the memory unit [(18)] for the desired positions as  
15 well as each position sensor [(17)] for the respective actual  
16 position are connected with a computer [(18)] which calculates the  
17 difference between the respective desired position and the respec-  
18 tive actual position; and  
19 each machine element [(2, 5, 10, 13)] to be positioned is  
20 associated with a respective display [(20)] which is connected to  
21 the computer [(18)] and which displays graphically or numerically  
22 the difference between the respective actual position and the  
23 respective desired position calculated by the computer [(18)].

1           2. (amended) The [machine or accessory] apparatus  
2 according to claim 1 [, characterized in that] wherein the computer  
3 [(18)] also determines the necessary direction to move the machine  
4 elements [(2, 6, 10, 13)] and transmits it to and displays it on  
5 the respective display [(20)].

1           3. (amended) The [machine or accessory] apparatus  
2 according to claim 1 [or 2, characterized in that] wherein a common  
3 calculating and memory unit [(18)] is connected with the respective  
4 position sensors [(17)] and displays [(20)], preferably via a buss  
5 system [(19)].

1           4. (amended) The [machine or accessory] apparatus  
2 according to claim 1 [or 2, characterized in that] wherein the  
3 memory unit for the actual positions is separate from a commonly  
4 used calculating unit.

1           5. (amended) The [machine or accessory] apparatus  
2 according to claim 1 [or 2, characterized in that] wherein each  
3 position sensor [(17)] is integrated with a calculator for deter-  
4 mining differences.

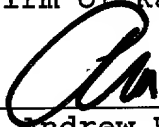
1           6. (amended) The [machine or accessory] apparatus  
2 according to [one of] claim[s] 1 [to 5, characterized in that]  
3 wherein each display [(20)] is integrated with the respective  
4 position detector [(17)].

Remarks:

This amendment is submitted in an earnest effort to advance this case to issue without delay.

The appropriate PCT cross-reference paragraph has been inserted and the claims have been amended to better comply with US practice and to eliminate multiple dependencies.

Respectfully submitted,  
The Firm of Karl F. Ross P.C.

  
by: Andrew Wilford, 26,597  
Attorney for Applicant

19 July 2000

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## Description

Machine or Accessory for Producing Folded Containers, in Particular  
Folded Boxes, From Blanks

## Technical Field

5 The invention relates to a machine or accessory for making folded containers, in particular folded boxes, from blanks according to the introductory clause of claim 1.

10 Folding-box gluing machines of the described type for making folded boxes from blanks have as is known at least the following working stations

a loader which draws the blanks to be used at high speed from a stack and feeds them individually to the following first working station,  
an applicator for adhesive, normally paste, that applies  
15 an adhesive strip to the fold tabs to be glued, and  
a folding station in which a blank part to be provided with a glue strip for producing a glue joint is bent through 180°, thus being folded.

20 Adjacent the folding station there is normally a so-called transfer station in which the boxes are counted, marked, and, if damaged, culled out. Thereafter there is a pressing

station at whose intake an overlapping stream of folded blanks is formed which are held in the pressing station for some time under pressure so that the two blank parts of the glue joint are joined. After the folded-box gluing machine there is normally a packing apparatus in which the flat folded boxes are packed in cartons. Furthermore it is standard to provide between the loader and the adhesive applicator a so-called prebreaker in which the folded tabs are folded back and forth so that the corresponding fold lines are made soft by bending through 180°. Transport of the blanks through the individual working stations or accessories is done by conveyor belts.

In order that the machine can make containers of different shape, the individual stations have machine elements for working on and conveying the blanks that can be positioned for the various blank sizes. Such machine elements to be positioned are for example the stack walls and holding tongues of the loader, the folding elements of the folding station, and the adhesive nozzles or applicator elements of the adhesive applicator, as well as the transport belts in the individual stations or accessories. When made as an accessory the packing apparatus for the folded boxes and a so-called preloader for automatically supplying the loader have elements that must be positioned dependent on blank format. With the exception of the pressing station there are in each working station machine elements that must be repositioned with each change of blank format transversely or longitudinally to the travel direction of the blanks or even vertically.



## State of the Art

The product literature "DIANA 05-3 The Universally Usable Folded Box Gluing Machine" of applicant describes such a folded box gluing machine that has digital position indicators for the machine elements to be positioned. There is an electronic data book serving as memory unit for the desired positions of the various types of boxes which displays on a screen the desired position to the machine adjuster for manual setting. The folded-box gluing machine is also provided with an adjusting mechanism which is connected to the computer to directly and automatically set the machine elements for format by means of attached drive motors. This system is however very expensive.

## Object of the Invention

The object of the invention is to inexpensively improve a machine or accessory of the describe type where the machine elements are manually positioned so that the machine adjuster can manually rapidly set positions with little likelihood of error.

This object is achieved with the features of claim 1.

The solution of the invention has the advantage that the machine adjuster when resetting position is shown the amount of repositioning needed to the desired position and preferably also the direction of positioning movement right there where the

adjustment must be made. When the difference is equal to zero the desired position has been reached. The adjuster does not need to read the desired position from a remote screen and make a note of it or remember it so that he can set the corresponding machine element to the right position. With the large number of machine elements to be positioned in a folded-box gluing machine the remembering and transferring of desired positions creates the danger of errors and is also time-consuming, e.g. if the adjuster makes a printout of the values.

The solution according to the invention has the further advantage that it contains elements that can all be used when refitting the machine to fully automatic operation.

The dependent claims describe various preferred and particularly advantageous embodiments of the invention.

#### Brief Description of the Drawing

The drawing serves for describing the invention with reference to a schematically illustrated embodiment.

FIG. 1 shows in a schematic side view the individual stations of a folded-box gluing machine.

FIG. 2 schematically shows the arrangement of the elements serving for positioning.

## Embodiment of the Invention

In the transport direction (from right to left) the machine starts with a loader 1 which draws the blanks to be worked with high speed from a stack and feeds them individually to the downstream working stations. The loader 1 has a stack support on which the blanks are set in a stack and which is defined by a output conveyor formed as a belt conveyor that engages the bottom of the stack. On its output side the stack support is provided with adjustable tongues that end slightly above the output conveyor so that a gap is left open through which the blanks can be drawn individually off the bottom of the stack. Such a loader is described in German patent 2,946,426.

When the box is changed, the side walls 2 of the stack support -- as shown in FIG. 2 -- are repositioned transversely to the transport direction. They are to this end mounted on adjustment spindles 3 which are each mounted at their ends for rotation in side walls of the station.

The loader 1 is followed by a prebreaker 5 which in this embodiment works in two stages. The prebreaker 5 has folding elements 6 that fold tabs forward and back so that the corresponding longitudinal fold lines are softened by folding through 180°. Two-stage construction makes it possible to soften several fold lines. With certain box shapes glue applicators are also provided inside the prebreaker 5 in order to apply additional glue strips extending longitudinally. The folding elements 6, for

example roller arms, supported folding belts, and roller rails, must be repositioned transversely like the conveyor belts leading through the prebreaker 5 when the box shape is changed. In order to facilitate such transverse positioning, these elements and the conveyor belts extending through the prebreaker -- as shown in FIG. 2 -- are also mounted on adjustment spindles that extend full width transversely with their ends rotatably mounted in the side walls 4 of the machine.

Following the prebreaker 5 as the next working station is the folding station 8 at whose upstream side is an applicator 9 for an adhesive, normally paste. The adhesive applicator 9 has extending transverse to the positioning elements glue nozzles or glue plates from which the adhesive is applied in strips to the blanks. Thereafter the fold tabs of the blanks are folded by elements 10 (folding belts, roller arms, roller rails), with the desired glue joint being formed. Even the folding elements 10 must be transversely positioned according to blank size. They are to this end, like the glue-applying elements of the adhesive applicator 9 and the conveyor belts extending through the folding station, adjustable across the width of the machine by spindles 11.

Subsequently the flat folded boxes are fed to a transfer station 12 whose conveyor belts 13 are also transversely positionable on spindles 14. In order to accommodate various box lengths the transport length of the conveyor belts 13 can also be varied in the travel direction. To this end at least the output rollers of a conveyor belt are moveable in and against the

transport direction by means of a rack. In the transfer station a train of the folded boxes is produced that subsequently is advanced to a following pressing station. In addition in the region of the transverse station 12 there are devices by means of which the boxes  
5 are counted, marked, and, if damaged, culled out. Even these devices must if necessary be adjusted when the box shape changes transversely, longitudinally, or vertically. The pressing station has pressing elements by means of which the glue seams are held under pressure until the glue is fixed.

10 FIGS. 1 and 2 do not illustrate accessories that also have elements positioned transversely, longitudinally, or vertically. Such an accessory is for example a packing device following the pressing apparatus 15 and serving to pack the flat folded boxes in cartons. A particularly ideal packing device is described in German patent 2,825,648. A further additional system is for example a so-called preloader that serves for increasing the production capacity upstream of the loader. Such a preloader is described in German published application 195 35 903. It serves to  
15 feed the blanks to the stack of the loader 1 in overlapping  
20 condition.

Even these additional systems have, for receiving, working on, or advancing the blanks, machine elements that must be repositioned when the box shape changes. They therefore have additionally or even alone the elements described below for the  
25 box-folding machine and which must be used on for conversion to another box format.

Each adjustment spindle 3, 7, 11, and 14 projects somewhat from the side wall 16 of the respective station on the service side. Thus a service person can use an actuating tool, for instance a crank, electric wrench, or a pneumatic tool in order to rotate the adjustment spindles 3, 7, 11, and 14 and thereby change the positions of the machine elements mounted on them. On the outer side of the side wall 16 there is for each adjustment spindle 3, 7, 11, and 14 a position sensor 17 for determining the actual position of the machine element to be positioned. The position sensors 17 can be of the known absolute- or relative-measurement type that produce an output signal corresponding to the position of the machine element.

Each position sensor 17 is connected with a calculating and memory unit 18 in which the actual position of the respective machine element for the various boxes is stored. Preferably the position sensors 17 are connected via a buss system 19 with the calculating and memory unit 18.

Each machine element to be positioned is associated with a display 20 that is also connected via the buss system 19 with the computing and memory unit 18. The displays 20 are each adjacent the respective machine element to be positioned so that operating personnel can read them while making adjustments. Preferably the display 20 is as shown in FIG. 2 integrated into the respective position sensor 17. The computing and memory unit 18 calculates for each machine element the difference between the stored desired value and the measured actual value of its position and transmits

the difference to the respective display 20 where it is shown numerically or graphically. The adjusting personnel thus has the difference value in his view. He need merely rotate the respective spindle 3, 7, 11, or 14 until the difference is equal to zero.

5            Preferably the respective computer -- here the calculating and memory unit 18 -- also determines the necessary direction of movement of the machine element, transmits it to the respective display, and displays it there. This can also be done by a corresponding graphic display, for example by a colored  
10           display, or by use of a sign.

            In this embodiment the calculating and storage unit 18 holds both the data for the desired positions as well as the calculator for determining the difference between the desired positions and the actual positions. Since position sensors with  
15           integrated processors are available, such position sensors can be used to calculate the difference. In this case a separate memory units is needed only to hold the desired positions and feed them to the respective integrated processors. This solution is particularly advantageous when retrofitting existing machines that  
20           already have a memory unit for the desired positions.

            A further also preferable retrofittable embodiment has in addition to a separate memory for the desired positions, individual calculators for each measuring and display device.

            Such a calculator holds the desired positions from the  
25           memory unit and the respective actual positions from the position sensors. It calculates the difference between the respective

actual and desired positions and transmits the results to the respective displays.

Preferably for each machine element to be positioned there is also the possibility to display the actual position for monitoring purposes. Since each display 20 is connected with the  
5 respective position detector 17 for determining the actual position, the displays 20 are preferably also used to show the actual position, for example can be switched between the two display values. Alternatively separate displays can be provided  
10 for the actual positions of the respective machine elements. Thus each position sensor 17 can have a second display for the actual position.



## PATENT CLAIMS

1. Machine or accessory for making folded containers, in particular folded boxes, from blanks having

machine elements (2, 6, 10, 13) for acting on and/or  
moving the blanks or containers which are  
manually positionable for different blank  
sizes;

position sensors (17) for determining the actual  
positions of the machine elements (2, 6, 10,  
13) to be positioned; and

a memory unit (18) for storing the desired positions for  
various blank sizes,

characterized in that

both the memory unit (18) for the desired positions as  
well as each position sensor (17) for the respective actual  
position are connected with a computer (18) which calculates the  
difference between the respective desired position and the  
respective actual position; and

each machine element (2, 5, 10, 13) to be positioned is  
associated with a respective display (20) which is connected to the  
computer (18) and which displays graphically or numerically the  
difference between the respective actual position and the  
respective desired position calculated by the computer (18).

2. The machine or accessory according to claim 1, characterized in that the computer (18) also determines the necessary direction to move the machine elements (2, 6, 10, 13) and transmits it to and displays it on the respective display (20).

5 3. The machine or accessory according to claim 1 or 2, characterized in that a common calculating and memory unit (18) is connected with the respective position sensors (17) and displays (20), preferably via a buss system (19).

10 4. The machine or accessory according to claim 1 or 2, characterized in that the memory unit for the actual positions is separate from a commonly used calculating unit.

5 5. The machine or accessory according to claim 1 or 2, characterized in that each position sensor (17) is integrated with a calculator for determining differences.

15 6. The machine or accessory according to one of claims 1 to 5, characterized in that each display (20) is integrated with the respective position detector (17).

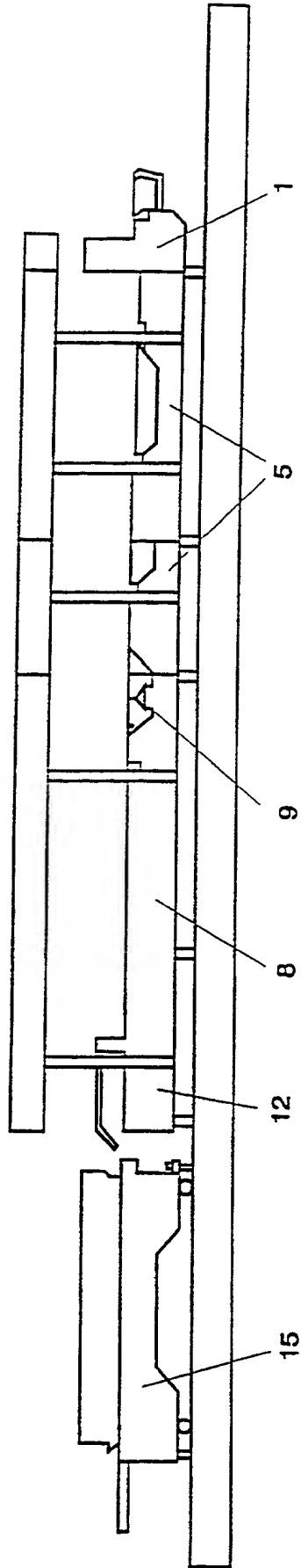


Fig. 1

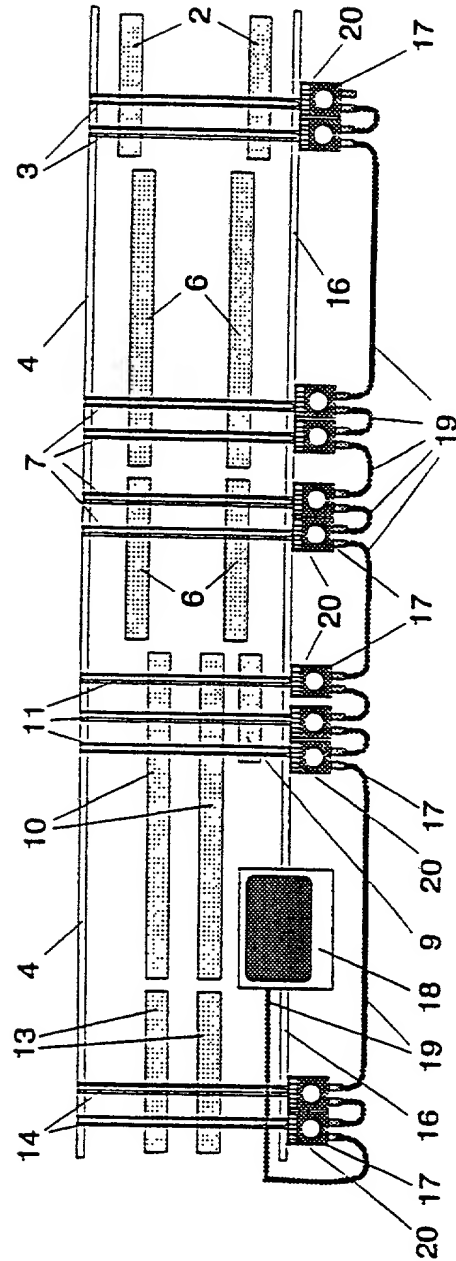


Fig. 2

1527

**DECLARATION AND POWER OF ATTORNEY**

As a below named inventor, I hereby declare that: My residence, post-office address, and citizenship are as stated below next to my name,  
I believe that I am the original, first, and sole inventor of the subject matter which is claimed and for which a patent is sought on the invention entitled

**MACHINE OR ACCESSORY UNIT FOR PRODUCING FOLDED CONTAINERS, ESPECIALLY FOLDING BOXES FROM BLANKS**

the specification of which was filed on **21 December 1998** as PCT application **PCT/EP98/08375**. ✓

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims.

I acknowledge the duty to disclose information which is material to patentability as defined in 37 CFR 1.56.

I hereby claim foreign priority benefits under 35 USC 119 of any foreign applications for patent or

inventor's certificate listed below and have also identified below any foreign applications for patent or

inventor's certificate having a filing date before that of the application on which priority is claimed:

**Prior Foreign Applications**

Country	Number	Filing Date	Priority claimed
DE	19803820.8 ✓	31 January 1998 ✓	Yes

I hereby claim the benefit under 35 USC 120 of the United States Application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States Application(s) in the manner provided by the first paragraph of 35 USC 112, I acknowledge the duty to disclose material information as defined in 37 CFR 1.56 which occurred between the filing date of the prior application and the national or PCT international filing date of this application:

Serial Number	Filing Date	Status
PCT/EP98/08375 ✓	21 December 1998 ✓	Pending

I hereby appoint as attorneys to prosecute this application and to transact all business connected therewith: **Herbert Dubno, Reg. 19,752; Jonathan Myers, Reg. 26,963; Andrew Wilford, Reg. 26,597** and each of them individually.

Address all correspondence to:

**The Firm of Karl F. Ross, P.C.**

**Customer Number 535**

**5676 Riverdale Avenue, Box 900**  
**Riverdale (Bronx), New York 10471-0900**

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I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or

21527

Ser. No. Not known - US phase of PCT/EP98/08375

both, under 18 USC 1001 and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

1-002 Full name of sole inventor:

Lothar KÜMPEL

Inventor's signature

9.6.2000

Lothar Kumpel

Date:

09.06.2000

Residence: Düsseldorf, Germany

DEX

Citizen of Germany ✓

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